We claim:-

1. A mixture of at least two compounds each having at least two double bonds, said mixture having a WFR from 200 to 600 g/mol of double bond and at least two of said compounds each comprising at least two (meth)acrylic esters as double bond component, WFR being given by:

$$\sum_{i=1}^{n} \alpha_i \times MW_i / Z_i = WFR \text{ where}$$

$$\sum_{i=1}^{n} \alpha_i = 1$$

α_i is equal to the molar fraction of compound (i) in said mixture,
n is equal to the number of compounds in said mixture and n is ≥ 2,
Z_i is equal to the number of double bonds in said compound (i),
MW_i is equal to the molecular weight of said compound (i).

2. The mixture according to claim 1 which has a WFR between 240 and 400 g/mol of double bond and preferably a WFR between 250 and 350 g/mol of double bond.

3. The mixture according to either of claims 1 and 2 wherein n is 2, 3 or 4 preferably 2.

4. The mixture according to any of claims 1 to 3 wherein the MW/Z ratios of two compounds differ at least by at least 50 g/mol of double bond, preferably by at least 100 g/mol of double bond and more preferably by at least 250 g/mol of double bond.

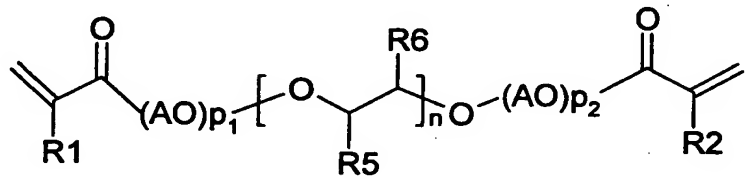
5. The mixture according to any of claims 1 to 4 wherein one compound has an MW/Z ratio of below 400 g/mol of double bond, preferably below 300 g/mol of double bond, more preferably below 200 g/mol of double bond and especially below 150 g/mol of double bond.

6. The mixture according to any of claims 1 to 5 wherein one compound has an MW/Z ratio of above 400 g/mol of double bond and below 10 000 g/mol of double bond and preferably of above 600 g/mol of double bond and below 1000 g/mol of double bond.

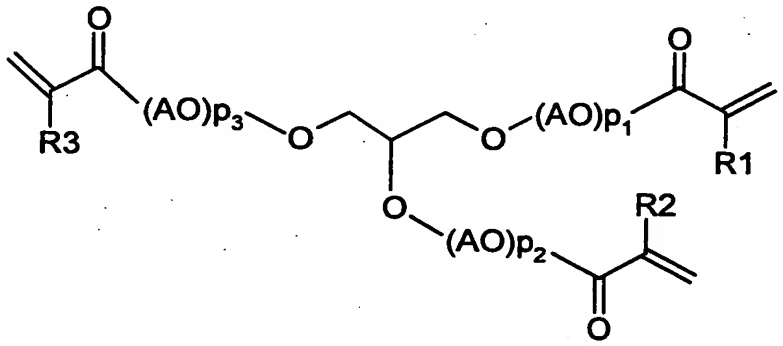
7. The mixture according to any of claims 1 to 6 wherein Z of at least one compound is between 2 and 6 and preferably is 2, 3 or 4.

8. The mixture according to any of claims 1 to 7 wherein said compounds are esters F_i which are obtainable by esterification of polyalcohols A_i with (meth)acrylic acid and each polyalcohol A_i has Z_i hydroxyl functions and from 2 to 50 carbon atoms.

9. The mixture according to any of claims 1 to 8 wherein one compound is represented by one of the following formulae:



Ia,



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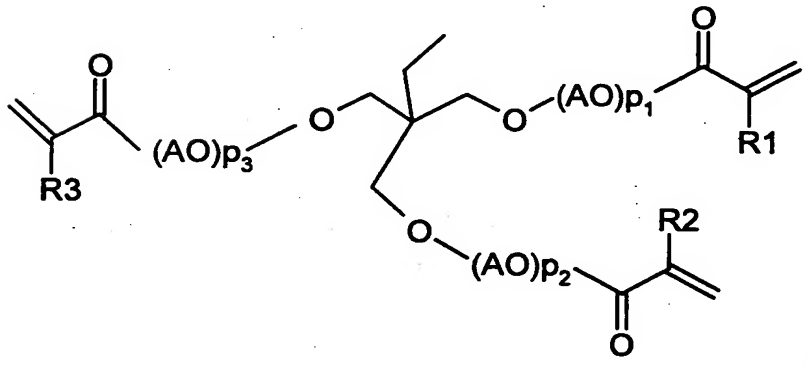
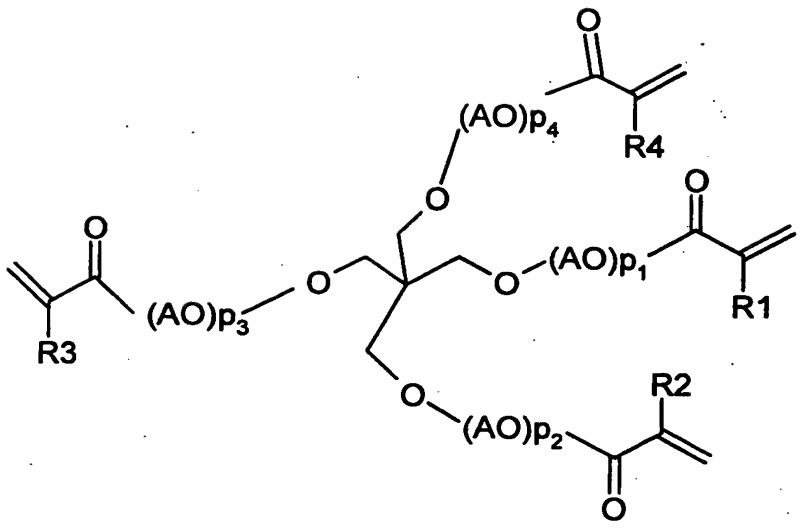


Ic,

or



Id

where AO is independently at each instance –O-CHR7-CHR8- or -CHR7-CHR8-O- where R7 and R8 are independently H, linear or branched C1-C8-alkyl,

R5 and R6 are independently H, linear or branched C1-C8-alkyl,

n is 1, 2 or 3

p1 is 0, 1 or 2,

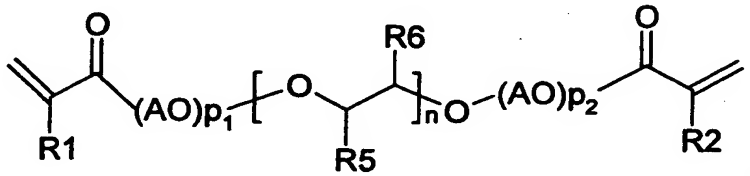
p2 is 0, 1 or 2,

p3 is 0, 1 or 2,

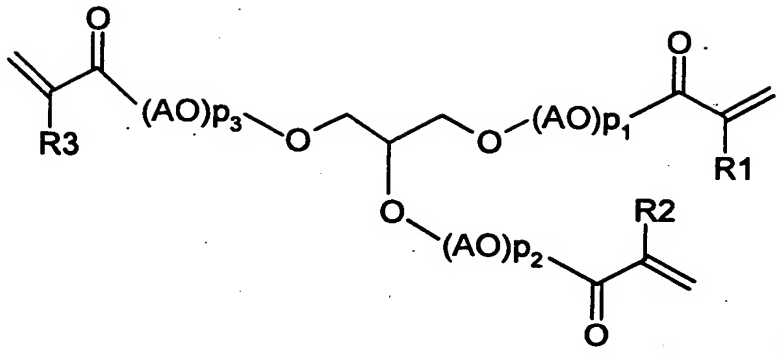
p4 is 0, 1 or 2,

R1, R2, R3, R4 are independently H or CH3,

10. The mixture according to any of claims 1 to 9 wherein one compound is represented by one of the following formulae:



Ia,



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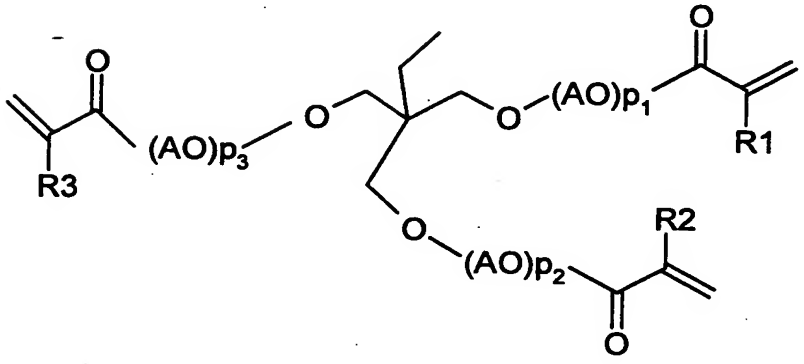
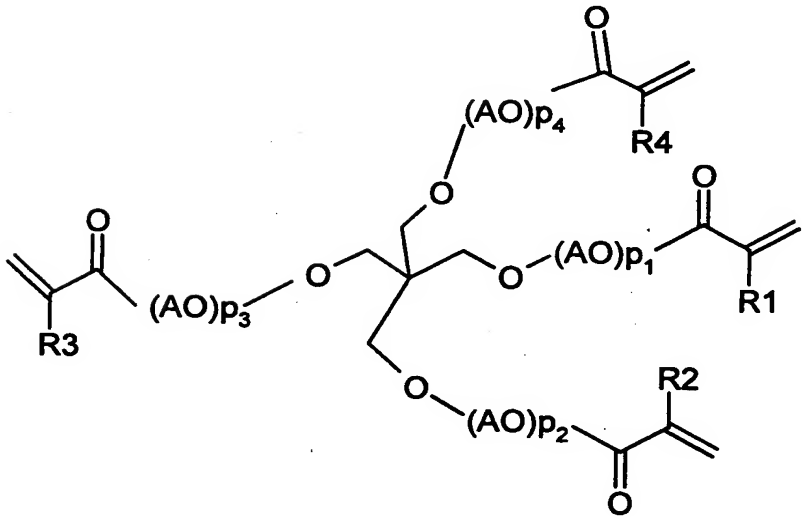


Ic,

or



Id

where AO is independently at each instance –O-CHR7-CHR8- or -CHR7-CHR8-O-, where R7 and R8 are independently H, linear or branched C1-C8-alkyl,

R5 and R6 are independently H, linear or branched C1-C8-alkyl,

n is 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19 or 20,

p1 is 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19 or 20,

p2 is 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19 or 20,

p3 is 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19 or 20,

p4 is 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19 or 20,

R1, R2, R3, R4 are independently H or CH3.

11. The mixture according to either of claims 9 and 10 wherein AO is independently at each instance EO or PO,

where EO is O-CH2-CH2-,

PO is independently O-CH2-CH(CH3)- or O-CH(CH3)-CH2-

R5 and R6 are independently H or CH3

12. A process for preparing an ester mixture of said esters F_i according to any of claims 1 to 11 by starting from an alcohol mixture of said polyalcohols A_i, comprising the steps of

a) reacting said polyalcohols A_i with (meth)acrylic acid in the presence of at least one esterification catalyst C and of at least one polymerization inhibitor D and optionally also of a water-azeotroping solvent E to form an ester mixture of said esters F_i,
b) optionally removing from the reaction mixture some or all of the water formed in a), during and/or after a),
f) optionally neutralizing said reaction mixture,
h) when a solvent E was used, optionally removing this solvent by distillation, and/or
i) stripping with a gas which is inert under the reaction conditions.

13. The process according to claim 12 wherein

- the molar excess of (meth)acrylic acid over said polyalcohols A_i is at least $5*Z_i$ mol% and
- the optionally neutralized (meth)acrylic acid comprised in said reaction mixture after the last step substantially remains in said reaction mixture.

14. The process according to either of claims 12 and 13 wherein the (meth)acrylic acid is not more than 75% by weight removed from said reaction mixture obtained after said last step, which reaction mixture comprises ester mixture.

15. The process according to any of claims 12 to 14 wherein said reaction mixture obtained after said last step, which comprises ester mixture, has a DIN EN 3682 acid number of at least 25 mg KOH/g.

16. The process according to any of claims 12 to 15 wherein said reaction mixture obtained after said last step, which comprises ester mixture, has a (meth)acrylic acid content of at least 0.5% by weight.

17. The process according to any of claims 12 to 16 wherein the molar ratio of (meth)acrylic acid to alcohol mixture A_i in reaction a) is at least $5*Z_i$:1.

18. A process for preparing a crosslinked hydrogel, comprising the steps of

k) polymerizing an ester mixture of said esters F_i according to any of claims 1 to 11 with (meth)acrylic acid, with optionally additional monoethylenically unsaturated compounds N and optionally also at least one further copolymerizable hydrophilic monomer M in the presence of at least one free-radical initiator K and optionally of at least one further grafting base L,
l) optionally postcrosslinking the reaction mixture obtained from k),
m) drying the reaction mixture obtained from k) or l), and
n) optionally grinding and/or sieving the reaction mixture obtained from k), l) or m).

19. A process for preparing a crosslinked hydrogel, comprising steps a) to i) according to any of claims 12 to 17 and additionally

k) polymerizing the reaction mixture from one of stages a) to i) if performed, with optionally additional monoethylenically unsaturated compounds N and optionally also at least one further copolymerizable hydrophilic monomer M in the presence of at least one free-radical initiator K and optionally of at least one grafting base L,
l) optionally postcrosslinking the reaction mixture obtained from k),
m) drying the reaction mixture obtained from k) or l), and
n) optionally grinding and/or sieving the reaction mixture obtained from k), l) or m).

20. Polymer obtainable according to a process according to either of claims 18 and

19.

21. Crosslinked hydrogel comprising at least one hydrophilic monomer M in copolymerized form crosslinked with an ester mixture of said esters F_i according to any of claims 1 to 11.

22. Crosslinked hydrogel comprising at least one hydrophilic monomer M in copolymerized form crosslinked with a reaction mixture which comprises an ester mixture of said esters F_i and is obtainable according to a process of claims 12 to 15.

23. The use of a polymer according to any of claims 20 to 22 in hygiene articles, packaging materials and in nonwovens.

24. A composition of matter comprising

- from 0.1% to 40% by weight of at least one ester mixture of said esters F_i according to any of claims 1 to 11 and (meth)acrylic acid,
- 0.5 – 99.9% by weight of at least one hydrophilic monomer M,
- 0 – 10% by weight of at least one esterification catalyst C,
- 0 – 5% by weight of at least one polymerization inhibitor D, and
- 0 – 10% by weight of at least one solvent E,

with the proviso that the sum total is always 100% by weight.

25. The composition of matter according to claim 24, further comprising

- a diluent G ad 100% by weight.

26. Crosslinked hydrogel obtainable from a composition of matter according to claim 24 or 25 and additionally

l) optionally postcrosslinking the reaction mixture obtained,
m) drying the reaction mixture obtained directly or obtained from l), and
n) optionally grinding and/or sieving the reaction mixture obtained directly or obtained from l) or m).

27. The use of a reaction mixture obtainable according to any of claims 12 to 17 or of a composition of matter according to claim 24 or 25

- as a free-radical crosslinker of water-absorbing hydrogels,
- as a starting material for preparing polymer dispersions,
- as a starting material for preparing polyacrylates,

- as a paint raw material, or
- as a cement additive.

28. The crosslinked hydrogel according to any of claims 20, 21, 22 or 26 which has a residual crosslinker content of less than 10 ppm, preferably less than 8 ppm and more preferably less than 5 ppm.

29. The use of an ester mixture of said esters F_i according to any of claims 1 to 11 for preparing hydrogel-forming polymers capable of absorbing aqueous fluids.

30. The use of an ester mixture according to claim 29 wherein each ester component F_i is present at less than 2% by weight and preferably 1% by weight based on the total amount of monomers.